## Contents – Part I

### HCI Theory and Education

Audiovisual Design and the Convergence Between HCI and Audience Studies ........................................ 3  
*Valdecir Becker, Daniel Gambaro, and Thais Saraiva Ramos*

Human Computer Interaction Research Through the Lens of a Bibliometric Analysis .................................. 23  
*Konstantinos Koumaditis and Tajammal Hussain*

Guidelines for a University Short Course on Human-Computer Interaction ........................................... 38  
*Martin Maguire*

The Interplay Between Human and Machine Agency ................................................................. 47  
*J. Brian Pickering, Vegard Engen, and Paul Walland*

Software as a Medium for Understanding Human Behavior .............................................................. 60  
*Joshua Poore, Emily Vincent, and Laura Mariano*

Vocational Training of IT-Professionals: Coping with Future Demands ........................................... 74  
*Henrik Schwarz and Stephanie Conein*

Human-to-Human Interaction: The Killer Application of Ubiquitous Computing? ................................. 86  
*Salvatore Sorce, Stefano Ruggieri, Vito Gentile, Antonio Gentile, and Alessio Malizia*

Requirement on Personnel and Organization for Safety and Security Improvement by Accident and Error Model ................................................................. 94  
*Hiroshi Ujita*

Brain-Computer Interfaces: Agency and the Transition from Ethics to Politics ......................................... 103  
*Andreas Wolkenstein*

### HCI, Innovation and Technology Acceptance

The Experiential Utility: How Behavioural Economics Can Help HCI to Define Quality .......................... 121  
*Stefano Bussolon*
Failures Supporting the Evolutionary Design in the Wild of Interactive Systems for Public Spaces .......................... 283
Vinicius Ferreira, Junia Anacleto, and Andre Bueno

Methods for Evaluation of Tooltips ............................................. 297
Helene Isaksen, Mari Iversen, Jens Kaasbøll, and Chipo Kanjo

An Analysis of CAD Modeling Procedure Data Collection Using Synchronous and Retrospective Think Aloud Techniques. .............. 313
Michael D. Johnson and Karl Ye

Adoption of the Focus Groups Technique in the Open Source Software Development Process. ........................................... 325
Lucrecia Llerena, Nancy Rodriguez, John W. Castro, and Silvia T. Acuña

Game for Heuristic Evaluation (G4H): A Serious Game for Collaborative Evaluation of Systems ........................................... 341
Paulyne Matthews Jucá, Ingrid Teixeira Monteiro, and José Cezar de Souza Filho

Using Spatio-Temporal Saliency to Predict Subjective Video Quality: A New High-Speed Objective Assessment Metric .................. 353
Maria Laura Mele, Damon Millar, and Christiaan Erik Rijnders

An Exploratory Study on the Predictive Capacity of Heuristic Evaluation in Visualization Applications ................................. 369
Beatriz Sousa Santos, Samuel Silva, Beatriz Quintino Ferreira, and Paulo Dias

Usability Matters: User Experiences of Visually Impaired Older Adults .... 384
Miroslav Sili, Matthias Gira, and Christopher Mayer

User Interface Development: Methods, Tools and Architectures

Practical Aspects of Pattern-Supported Model-Driven User Interface Generation ............................................. 397
Jürgen Engel, Christian Märtin, and Peter Forbrig

How Cloud Computing Is Addressed for Software Development in Computer Science Education ................................. 415
Dahai Guo and Anna Koufakou

Generalized Reference: Referring with and Without Language by Matching, Pointer, or Address ................................. 427
Roland Hausser
SitAdapt: An Architecture for Situation-Aware Runtime Adaptation of Interactive Systems ......................................................... 447
  Christian Herdin, Christian Märtin, and Peter Forbrig
Adapting User Interface Models by Transformations Based on UI Patterns . . 456
  Mathias Kühn and Peter Forbrig
A POMDP Design Framework for Decision Making in Assistive Robots . . . 467
  Ioannis Kostavelis, Dimitrios Giakoumis, Sotiris Malassiotis,
  and Dimitrios Tzovaras
Integration of a Template System into Model-Based User Interface
Development Workflows .......................................................... 480
  Christopher Martin and Annerose Braune
A Study on Extracting Attractive Regions from One-Point
Perspective Paintings ............................................................... 496
  Ryoma Matsuo, Haruka Sugimoto, Mamiko Sakata,
  and Michiya Yamamoto
Posture Analysis and Evaluation for Modeling in Elderly Adults . . . . . . 506
  Yumiko Muto, Makoto Sugou, Kaede Tsumurai, Honami Ito,
  Yuichiro Hosono, and Takeshi Muto
Usability Evaluation of Domain-Specific Languages: A Systematic
Literature Review ..................................................................... 522
  Ildevana Poltronieri Rodrigues, Márcia de Borba Campos,
  and Avelino F. Zorzo
Endpoint Fusing Method for Axonometric Drawing of Online Freehand
Sketched Polyhedrons ............................................................... 535
  Shuxia Wang, Qian Zhang, Shouxia Wang, Mantun Gao, Xiaoke Jing,
  and Xiaoming Hui

Multimodal Interaction
Implementing a Platform for Complex Information Processing from Written
and Spoken Journalistic Data ...................................................... 549
  Christina Alexandris, Konstantinos Mylonakis, Stefanos Tassis,
  Mario Nottas, and George Cambourakis
MagicPad HD: The Spatial User Interface ..................................... 559
  Leith K.Y. Chan and Henry Y.K. Lau
Controlling Interaction in Multilingual Conversation Revisited:
A Perspective for Services and Interviews in Mandarin Chinese .......... 573
  Jiali Du, Christina Alexandris, Dimitrios Mourouzidis, Vasilios Floros,
  and Antonios Iliakis
Design of Hand Gestures for Manipulating Objects in Virtual Reality
Wanhong Lin, Lear Du, Carisa Harris-Adamson, Alan Barr, and David Rempel

A Widely Applicable Real-Time Mono/Binocular Eye Tracking System
Using a High Frame-Rate Digital Camera
Keiji Matsuda, Takeshi Nagami, Yasuko Sugase, Aya Takemura, and Kenji Kawano

Bigger (Gesture) Isn’t Always Better
David Novick, Ivan Gris, Adriana Camacho, Alex Rayon, and Timothy Gonzalez

Gesture-Based Interactions in Video Games with the Leap Motion Controller
Johanna Pirker, Mathias Pojer, Andreas Holzinger, and Christian Gütl

Crafting Concrete as a Material for Enhancing Meaningful Interactions
Yanan Wang, Shijian Luo, Shuai Liu, Yujia Lu, and Preben Hansen

Haptic User Experience Based on User Preference
Hoon Sik Yoo, So Yon Jeong, and Da Young Ju

Emotions in HCI

Persuasive Argumentation and Emotions: An Empirical Evaluation with Users
Mohamed S. Benlamine, Serena Villata, Ramla Ghali, Claude Frasson, Fabien Gandon, and Elena Cabrio

Human vs. Computer Performance in Voice-Based Recognition of Interpersonal Stance
Daniel Formolo and Tibor Bosse

A Proposal of Model of Kawaii Feelings for Spoon Designs
Tiporn Laohakangvalvit, Tiranech Achalakul, and Michiko Ohkura

Affective Smile and Interaction: Smile is a Function of Interaction
Hisao Shiizuka

Inducing Fear: Cardboard Virtual Reality and 2D Video
C. Natalie van der Wal, Annabella Hermans, and Tibor Bosse

Emotion Evaluation Through Body Movements Based on Silhouette Extraction
Hong Yuan, Bo Wang, Li Wang, and Muxun Xu

Author Index
Contents – Part II

Games in HCI

Bringing Game Design Models to Life ......................................................... 3
  Sandeep Athavale and Vasundhara Agrawal

Bus Runner: Using Contextual Cues for Procedural Generation of Game
Content on Public Transport ................................................................. 21
  Alexander Baldwin, Jeanette Eriksson, and Carl Magnus Olsson

Towards the Use of a Serious Game to Learn to Identify the Location
of a 3D Sound in the Virtual Environment .............................................. 35
  Sabrine Boukhris and Bob-Antoine J. Menelas

Can Online Games Survive Longer? ......................................................... 45
  Yuchen Gui, Eugene Hoyt, and Fan Zhao

A Case Study for Enhancing Mobile Games’ Immersion in Terms
of User Interface Design ................................................................. 54
  Xiaoneng Jin and Jing Guan

Who is with You? Integrating a Play Experience into Online Video
Watching via Danmaku Technology ....................................................... 63
  Lili Liu, Ayoung Suh, and Christian Wagner

Multi-screen and Multi-device Game Development ................................. 74
  Paulo S. Mendez, J.C. Silva, and José Luis Silva

Examining Enjoyment in Gamifying Physical Exercise and a Healthy Diet... 84
  Khasfariyati Razikin, Dion Hoe-Lian Goh, and Chei Sian Lee

Sources of Computer Game Enjoyment: Card Sorting to Develop
a New Model ....................................................................................... 99
  Owen Schaffer and Xiaowen Fang

Mobile and Wearable Interaction

When Technology Supports Urban Mobility: Improvements for Mobile
Applications Based on a UX Evaluation ................................................. 111
  Rodrigo L.A. Almeida, Lana B. Mesquita, Rainara M. Carvalho,
  and Rossana M.C. Andrade
XXII Contents – Part II

MAEK: Intuitive Instructional Content Delivered on a Smartphone Platform ........................................ 131
   Tess Bailie, Kelly A. Sprehn, and Trevor Savage

Predictive Model for Group Selection Performance on Touch Devices .... 142
   Per Bjerre, Allan Christensen, Andreas K. Pedersen, Simon A. Pedersen, Wolfgang Stuerzlinger, and Rasmus Stenholt

Exploring Predictors of Mobile Device Proficiency Among Older Adults ... 162
   Kimberly Champagne and Walter R. Boot

The Research of Wearable Device User Fatigue Based on Gesture Interaction .................................. 172
   Wen-jun Hou, Chun-jing Wu, and Xiao-lin Chen

Z-Force Cubic Interface .................................................. 183
   Jung Huh, Hoon Sik Yoo, and Da Young Ju

Meyboard: A QWERTY-Based Soft Keyboard for Touch-Typing on Tablets ....................................... 193
   Yuki Kuno and Buntarou Shizuki

Vouch-T: Multimodal Text Input for Mobile Devices Using Voice and Touch ........................................ 208
   Minyoung Lee and Gerard J. Kim

Model Based Dialogue Control for Smartwatches .................. 225
   Rainer Lutze and Klemens Waldhör

Notification System to Encourage a User to Refrain from Using Smartphone Before Going to Bed .................. 240
   Kazuyoshi Murata, Kouhei Shigematsu, and Yu Shibuya

Features and Quality of a Mobile Application Employed in a Speech-Language Therapy ................................ 250
   Tihomir Orehovački, Dijana Plantak Vukovac, Zlatko Stapić, and Tatjana Novosel-Herceg

Research on Discussion of Gender Difference in Preference for Smart Watches Based on Fuzzy Analytic Hierarchy Process .................. 263
   Tianxiong Wang and Feng Shan

Three-Finger-Tap Methods for Navigation in 3D Scenes on Tablet .... 276
   Hongyu Wang, Takeshi Umezawa, and Noritaka Osawa
**HCI, Children and Learning**

The Social Nature of Programming: Children and Fluency .......................... 291  
* M. Cecilia C. Baranauskas and Marleny Luque Carbajal

System for Measuring Teacher–Student Communication in the Classroom Using Smartphone Accelerometer Sensors ................................. 309  
* Naoyoshi Harada, Masatoshi Kimura, Tomohito Yamamoto, and Yoshihiro Miyake

Situation-Awareness in Action: An Intelligent Online Learning Platform (IOLP) ................................................................. 319  
* Jasser Jasser, Hua Ming, and Mohamed A. Zohdy

Thoughts on Effective Learning Procedure for Tangible Learning Environment Based on Embodied Design ............................. 331  
* Hideaki Kuzuoka, Ryo Kimura, Yuki Tashiro, Yoshihiko Kubota, Hideyuki Suzuki, Hiroshi Kato, and Naomi Yamashita

Learning by Tangible Learning System in Science Class ......................... 341  
* Yusuke Morita and Norio Setozaki

Toward Interest Estimation from Head Motion Using Wearable Sensors: A Case Study in Story Time for Children ........................ 353  
* Ayumi Ohnishi, Kaoru Saito, Tsutomu Terada, and Masahiko Tsukamoto

Development of a Tangible Learning System that Supports Role-Play Simulation and Reflection by Playing Puppet Shows .......................... 364  

Investigation of Learning Process with TUI and GUI ............................ 377  
* Natsumi Sei, Makoto Oka, and Hirohiko Mori

Exploiting Bodily Movement to Regulate Collaborative Learning by Designing a Tablet-Based CSCL System .......................... 385  
* Hideyuki Suzuki, Hideo Funaoi, and Yoshihiko Kubota

Plugramming: A Tangible Programming Tool for Children’s Collaborative Learning ................................................................. 398  
* Tomohito Yashiro, Yasushi Harada, and Kazushi Mukaiyama
**HCI in Complex Human Environments**

**DTMi – A New Interface for Informed Navigation** .............................................. 413  
*Tamara Babaian, Ren Zhang, and Wendy Lucas*

**Game of Drones: How to Control a UAV?** ...................................................... 424  
*Jan Conrad, Dieter Wallach, Fabian Kalweit, Patrick Lindel, and Stefan Templin*

**Acquiring Disaster Prevention Knowledge from Fieldwork Activities in a Region** .................................................................................................................. 433  
*Hisashi Hatakeyama, Masahiro Nagai, and Masao Murota*

**Research on Foreground Color Adaptive System of Aircraft Head-Up Display Based on the Background Real-Time Changes** ........................................ 443  
*Yu Hu, Chengqi Xue, Haiyan Wang, and Lei Zhou*

**Development of Sightseeing Support System with Emphasis on Scenery and Detours in Strolls** .......................................................... 452  
*Junko Itou, Takaya Mori, and Jun Munemori*

**Time-Aware Recommender Systems: A Systematic Mapping** .................... 464  
*Eduardo José de Borba, Isabela Gasparini, and Daniel Lichtnow*

**LifeRescue Software Prototype for Supporting Emergency Responders During Fire Emergency Response: A Usability and User Requirements Evaluation** ........................................ 480  
*Vimala Nunavath and Andreas Prinz*

**Usability Evaluation of Newly Developed Three-Dimensional Input Device for Drone Operation** .......................................................... 499  
*Micchiohura, Hiroya Sano, and Yuya Mochiyoshi*

**A Feedback Delivery System for Communal Energy Consumption Practices** ........................................................................................................... 512  
*Mina Rahimian and Lisa Domenica Iulo*

**Development of a Concept for Evaluation User Acceptance and Requirements for NFC Based E-ticketing in Public Transport** ................................. 522  
*Gertraud Schäfer, Andreas Kreisel, Denise Rummler, and Ulrike Stopka*

**Cloud Computing Security and Privacy: An Empirical Study** ..................... 534  
*Farid Shirazi, Adnan Seddighi, and Amna Iqbal*

**Augmenting Smart Buildings and Autonomous Vehicles with Wearable Thermal Technology** .......................................................... 550  
*Matthew J. Smith, Kristen Warren, David Cohen-Tanugi, Sam Shames, Kelly Sprehn, Jana L. Schwartz, Hui Zhang, and Ed Arens*
Gathering and Applying Guidelines for Mobile Robot Design for Urban Search and Rescue Application .................................................. 562
Ekaterina R. Stepanova, Markus von der Heyde, Alexandra Kitson, Thecla Schiphorst, and Bernhard E. Riecke

NFC-Enabled eTicketing in Public Transport – Aims, Approaches and First Results of the OPTIMOS Project .......................................................... 582
Ulrike Stopka, Gertraud Schäfer, and Andreas Kreisel

Scratchpad: Lightweight Data Capture Tool to Support Mission Planning. . . 598
Erika von Kelsch, Stephanie Kane, Chris Muller, and Chris Hogan

Multi-method Approach to Identify Acceptance-Relevant Characteristics of Renewable Energy Infrastructure .................................................. 608
Barbara Sophie Zaumbrecher and Martina Zieflé

HCI Case Studies

Measuring and Evaluating the User Experience Strategy Maturity of Spatial Web-Based Projects: A Case Study of Tehran Web-Based Map ........ 631
Kaveh Bazargan, Ali Rezaeian, and Hamidreza Hafeznia

Effect of Animated and Non-animated Pictograms for a Non-lingual Disaster Management Application .......................................................... 645
Luis Ernesto Domínguez-Ríos, Tomoko Izumi, Takayoshi Kitamura, and Yoshio Nakatani

The Gender Difference of Impression Evaluation of Visual Images Among Young People .......................................................... 664
Ayako Hashizume and Masaaki Kurosu

Experimental Evaluation of Immersive Feeling in VR System with HMD . . 678
Yoshiki Koinuma, Kazuki Miyamoto, and Michiko Ohkura

Relationship Between Worker Interruptibility and Work Transitions Detected by Smartphone .......................................................... 687
Kyohei Komuro, Yuichiro Fujimoto, and Kinya Fujita

Derivation of Mobility Services Through the Usage-Centered Development Approach .......................................................... 700
Sigmund Schimanski

Agenda Planning - Design Guidelines for Holistic Mobility Planning ........ 713
Tobias Wienken, Heidi Krömker, and Sebastian Spundflasch

Refining Supervisory Control Capability for Target User Populations ........ 721
Robert E. Wray, Randolph Jones, Charles Newton, and Ben Bachelor
User Requirement Analysis for Display User Experience in Smart Car. .... 732

Hoon Sik Yoo and Da Young Ju

Author Index ................................................................. 743
Human-Computer Interaction. User Interface Design, Development and Multimodality
Kurosu, M. (Ed.)
2017, XXVI, 734 p. 287 illus., Softcover
ISBN: 978-3-319-58070-8